Environment, Labor & Safety+ Conference

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Protein PACT

For the People, Animals *&* Climate *of* Tomorrow

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Formerly KCOE ISOM

Science-Based Target Setting Workshop

2023 NAMI ELS+ Conference

April 2023

Pinion Sustainability Presenters

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About Pinion

700+ people

Focus on Food & Ag

Financial Services

Audit, Tax Compliance & Strategy, AgKnowledge, Managed Accounting Services

Strategy Consulting

Strategic Advisory, HR Consulting, Sustainability, Government and Public Affairs, Succession Planning

Expertise Across Ag Supply Chains

Growers, Processors, Industry Organizations, etc.

National Offices

Across 11 states

Our Sustainability Services

Sustainability Program and Strategy Development	• Materiality Assessments • Sustainability Metric Development • Carbon Strategy Development and Greenhouse Gas (GHG) Accounting
Benchmarking and Reporting	• Data Management Planning and System Implementation • Inventories, Accounting, and Benchmarking • Customer and Investor Reporting
Goal Setting	• Baselining and Target Development (Science-Based Targets) • Roadmap Development • Strategic Planning and Modeling
Assurance	• Third-Party Verification – Stewardship Practices and Sustainability Data • Certifications

Workshop Overview

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Goals and Outcomes

Understand the importance and driving factors that are leading companies to set science-based targets (SBT).

Gain a more tangible understanding of the steps necessary to set an SBT.

Discuss and overcome barriers to developing inventories and setting targets.

Learn about resources available to assist in GHG accounting and SBT goals.

Engage with other industry members to share knowledge, challenges, and advice related to GHG accounting and target setting.

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Agenda

Topic	Presenter(s)	Duration
Science-Based Targets Introduction Value How to Set	**Pinion**	25 min
Why? A Customer's Perspective	Belinda Richardson, **McDonald's**	45 min
GHG Inventories How to Quantify Scope 3	**Pinion**	25 min
15-minute Break		
Case Study Breakout Activity	**All**	45 min
Panel Discussion	Irene Lopez Gutierrez, **Sigma** Mark Ritsema, **JBS**	45 min
Closing Approaching Barriers Strategies to Achieve Targets Key Takeaways	**Pinion**	25 min

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Science-Based Targets Introduction

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What are Science-Based Targets (SBTs)?

- **Externally validated** targets that focus on reducing greenhouse gas (GHG) emissions.
- Guided by **official protocols** published by the Science Based Targets initiative.
- Targets are considered "**science based**" if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement:
  - Limit global warming to **well below 2°C** above pre-industrial levels and pursue efforts to limit warming to **1.5°C**.

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

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Science-Based Targets

As of April 2023

Source: Science Based Targets initiative

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Science-Based Targets in the Animal Protein Industry

Companies within the protein industry that have validated SBTs or have committed to setting SBTs include:

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Why Set a Science-Based Target?

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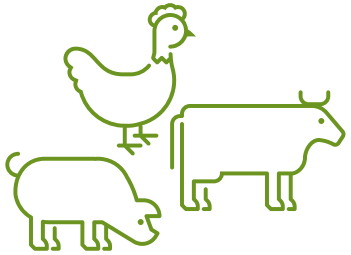
Value of Setting a Science-Based Target

Global Ambition



Value Chain Commitments
(Production Ag, Meat Processing, Customers)

Company Benefits

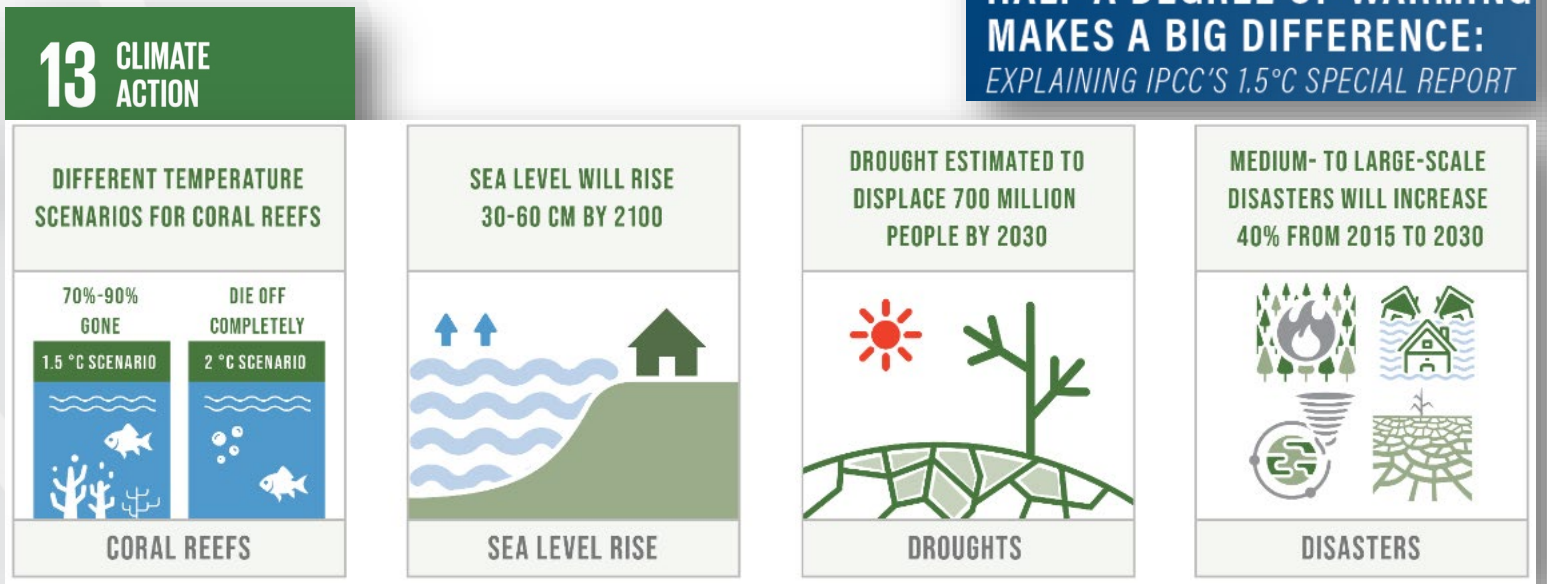
Value of Setting a Science-Based Target

Global Ambition

- Mitigate the worst impacts of climate change.

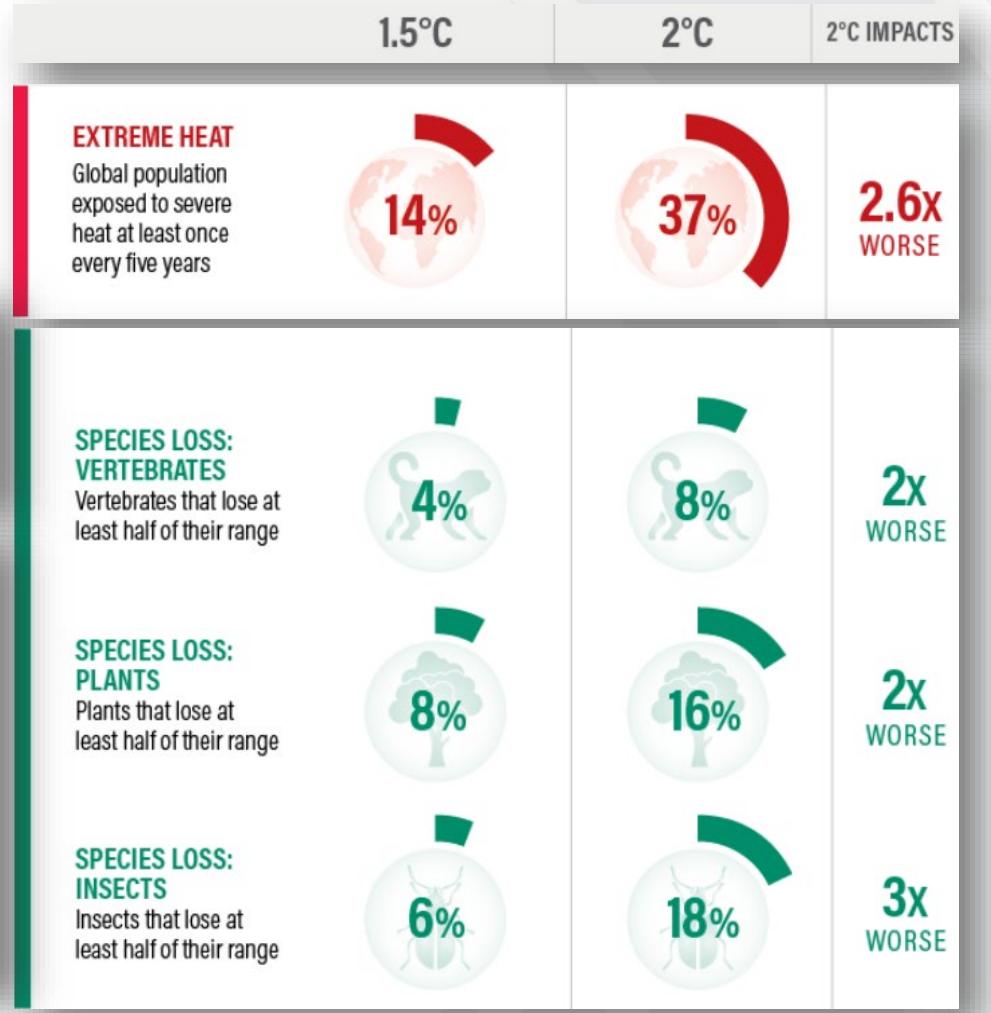
SUSTAINABLE DEVELOPMENT GOALS

13 CLIMATE ACTION



WORLD RESOURCES INSTITUTE

HALF A DEGREE OF WARMING MAKES A BIG DIFFERENCE:
EXPLAINING IPCC'S 1.5°C SPECIAL REPORT



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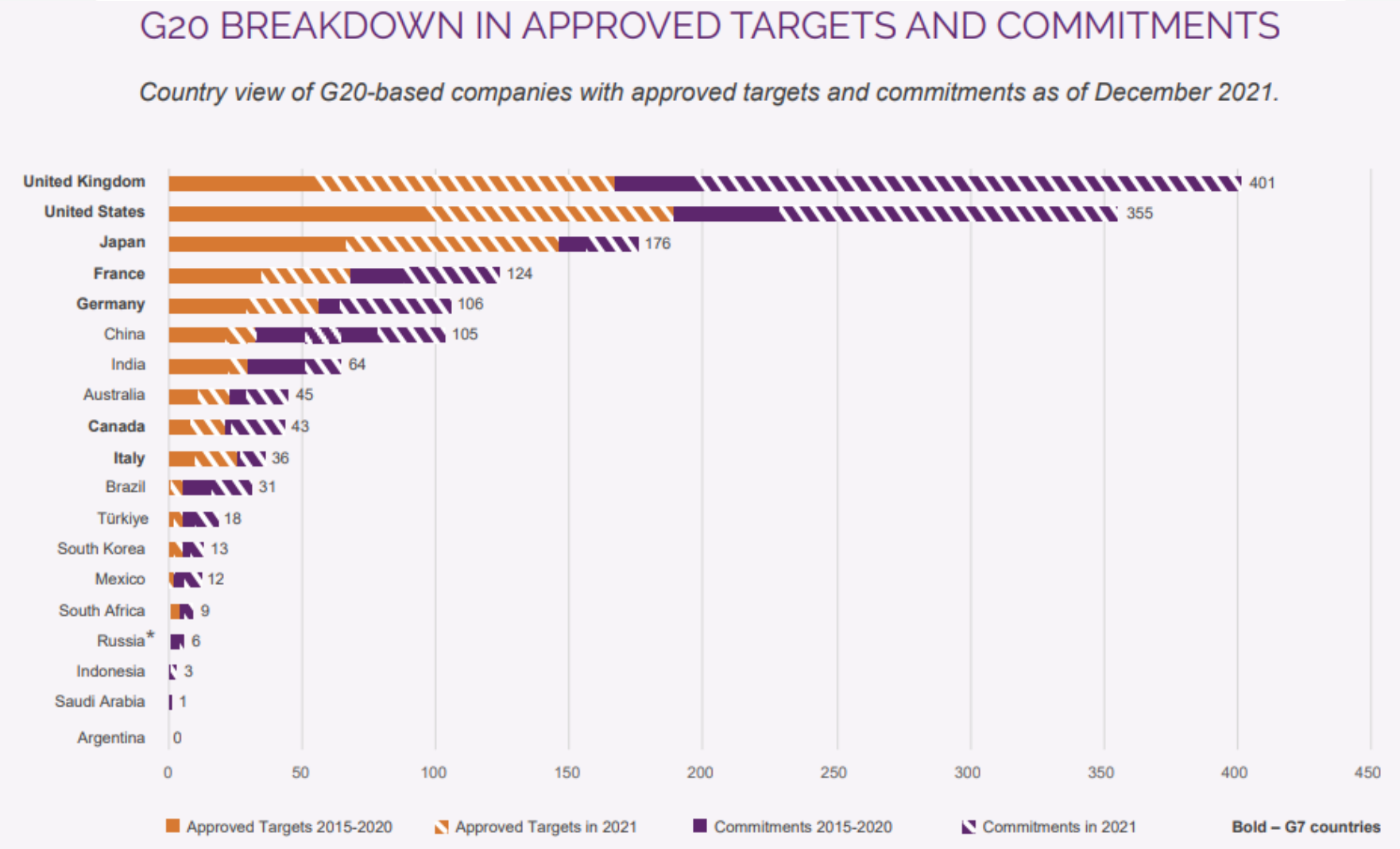
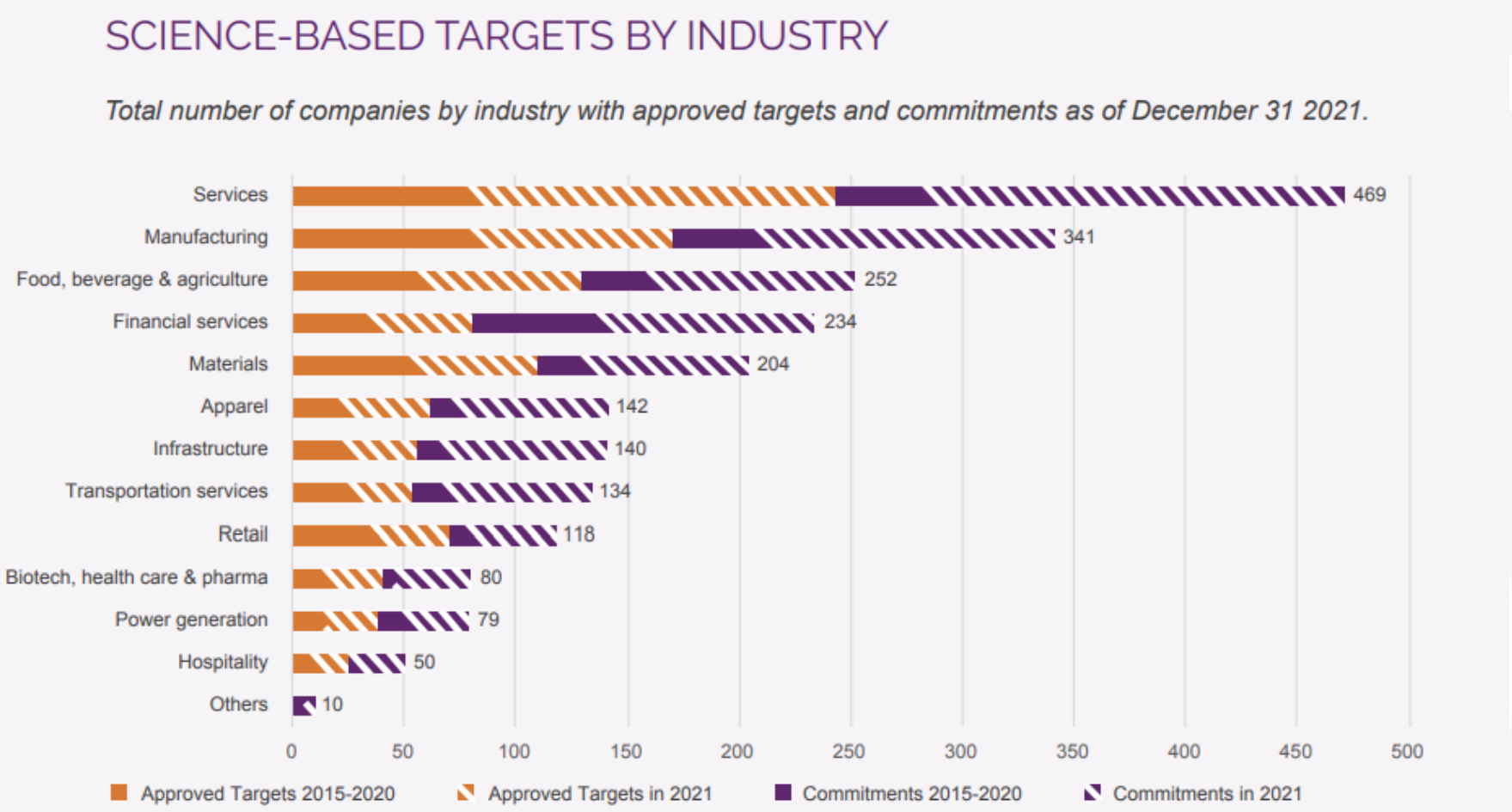
Science-Based Target Setting by Country



Source: Science Based Targets initiative

Science-Based Target Setting by Industry



Source: Science Based Targets initiative

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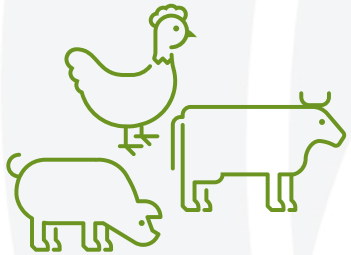
Value of Setting a Science-Based Target



Value Chain Commitments
(Production Ag, Meat Processing, Customers)

- Contribute to GHG emission reduction commitments set across the entire value chain.
- Build a more resilient food system.
- Collaborate to develop systems and advance projects that benefit the entire value chain.
- Strengthen consumer trust in agriculture.

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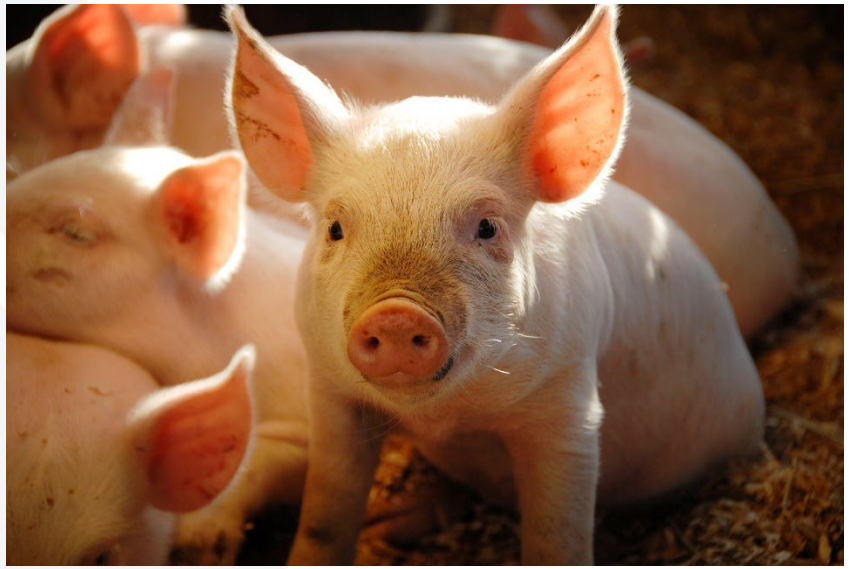
GHG Commitments – Production Agriculture

U.S. Roundtable for Sustainable Beef (USRSB):

- The U.S. beef supply chain will achieve **climate neutrality by 2040**.



National Pork Board:

- By 2030, the pork industry will **reduce GHG emissions by 40%** from a 2015 baseline.

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GHG Commitments – Meat Processing

The North American Meat Institute (NAMI), through the Protein Pact, has announced an industry-wide climate goal:

- 100% of NAMI members will have **approved science-based targets** in line with the Paris Climate Agreement goals by 2030.

Protein PACT

Achievement snapshot:

11 Meat Institute member companies have set or publicly **committed to set a Science-Based Target**, representing a significant portion of meat sold in the United States.

Have set SBT

Maple Leaf, Tyson, Cargill

Have publicly committed to set SBT

Johnsonville, Hormel, Smithfield, Sigma, Kraft Heinz, National Beef, Marfrig, JBS, Lopez, Dorada Foods

81% of reporting establishments are covered by a company commitment to **reduce GHG emissions**

84% of reporting establishments are covered by a company commitment to **measure scope 1 and 2 emissions**

81% of reporting establishments are covered by a company commitment to **measure scope 3 emissions**

Source: North American Meat Institute

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GHG Commitments – Customers

Buyers of animal protein that have validated SBTs or have committed to setting SBTs include:

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Value of Setting a Science-Based Target

Company Benefits

- Reduce risk and increase resiliency.
- Contribute to key customer goals / Win new customers.
- Improve efficiency to reduce GHG emissions.
- Strengthen reputation and trust in the company.
- Drive innovation both within and outside of the company.


Picture Source: Science Based Targets initiative

pinion

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SBT Workshop Discovery Questions

Are your customers or other stakeholders asking about GHG data or science-based target setting?

a) None yet

b) A few (1–3) are requesting data or targets

c) Many (4+) are requesting data or targets

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SBT Workshop Discovery Questions

Where are you in the process of quantifying your emissions?

a) Have not completed scope 1, 2, or 3 inventory

b) Have completed scope 1 and 2 inventory, have not started on scope 3

c) Have completed scope 1 and 2 inventory, working on scope 3

d) Completed scope 1, 2, and 3 inventory

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SBT Workshop Discovery Questions

Where are you in the process of setting a science-based target?

a) Not considering a target

b) Considering setting a target

c) Formally committed (through the SBTi) to setting a target

d) Submitted a target for validation, waiting for approval

e) Have an SBTi-approved target set

pinion

SBT Workshop Discovery Questions

Which roadblocks or concerns do you have related to setting a science-based target or conducting a GHG inventory? (**Check all that apply**)

a) Cost

b) Lack of time

c) Insufficient data

d) Complexity of requirements / lack of technical expertise

e) Little/no perceived value

f) Fear voluntary efforts will become regulatory

g) None

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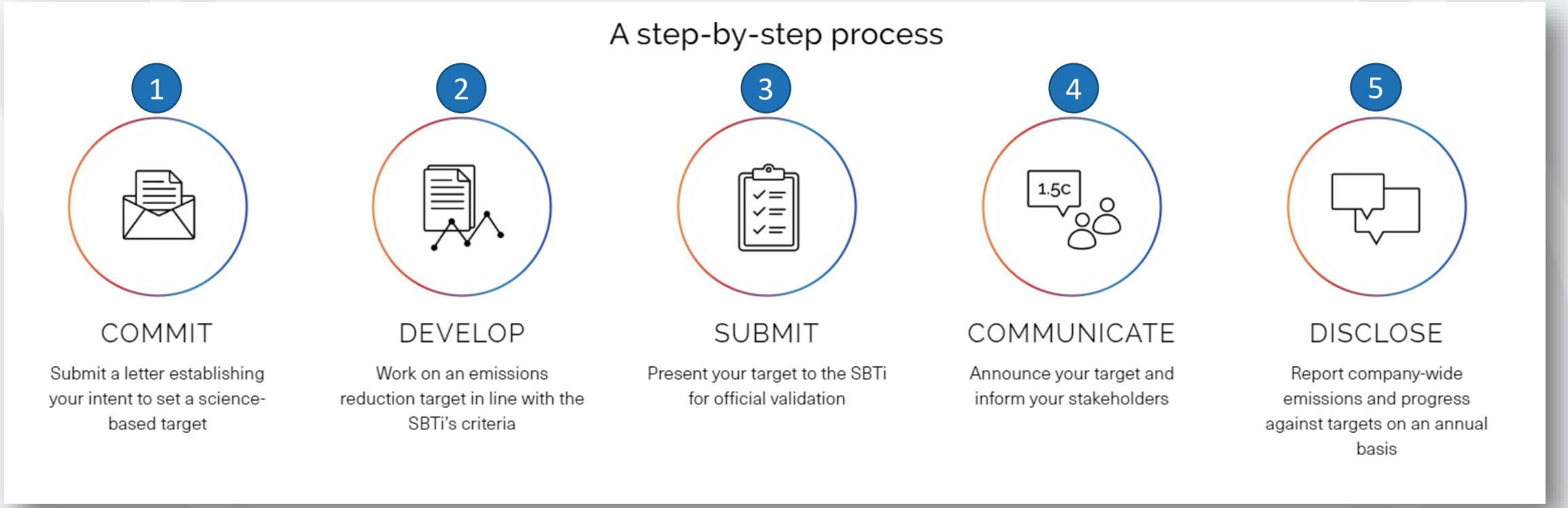
How to Set a Target

Requirements
Strategy
Resources

pinion

Setting a Science-Based Target



Source: Science Based Targets initiative

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Small- and Medium-Sized Enterprises (SMEs)

- SME = A non-subsidiary, independent enterprise that employs **fewer than 500 employees.**
- The SBTi has set a separate, **expedited route for SMEs**.
  - SMEs bypass the initial SBT commitment stages and the standard target validation process.
  - SMEs can **immediately set** a SBT for their scope 1 and 2 emissions by choosing from one of **two predefined target options**.
- SMEs are not required to sign the standard commitment letter.
  - Use the SME science-based target setting form.
- Unlike larger companies, the SBTi **does not require SMEs to set targets for scope 3 emissions**.
  - SMEs are still asked to commit to measuring and reducing their scope 3 emissions.

Source: Science Based Targets initiative

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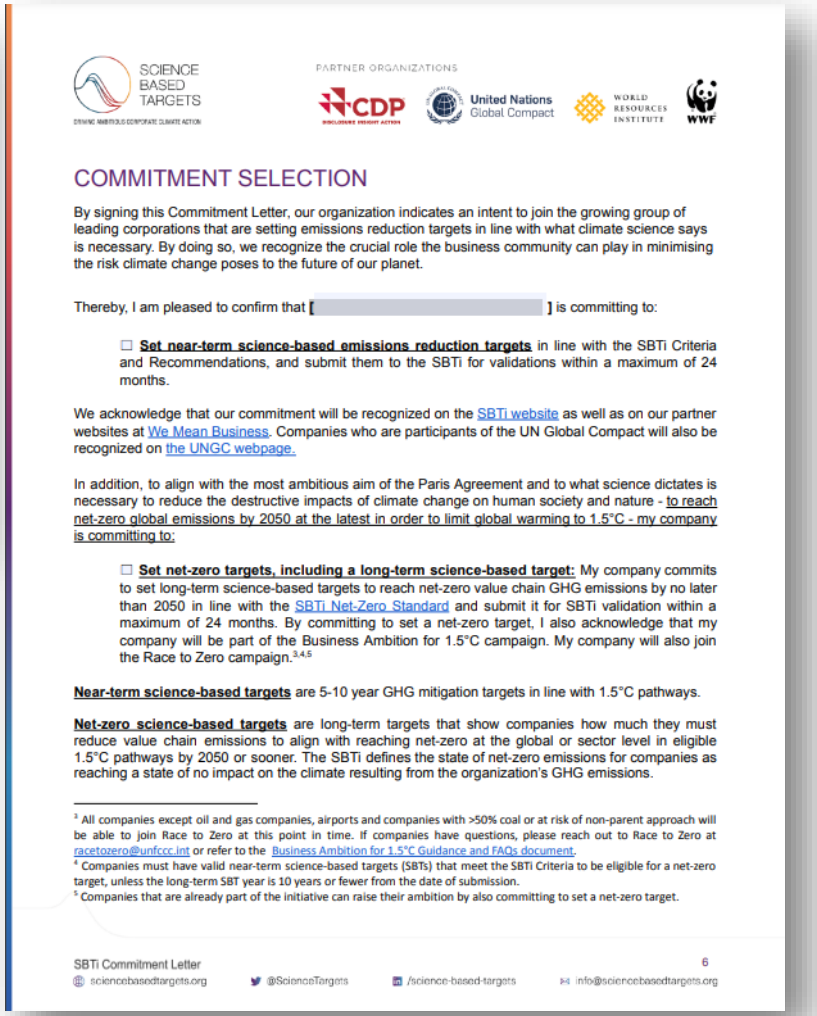
Setting a Science-Based Target- Commit

1

COMMIT

Submit a letter establishing your intent to set a science-based target

1. Register
2. Sign Commitment Letter
3. SBTi due diligence review
4. Commitment published on SBTi website



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COMMITMENT SELECTION

By signing this Commitment Letter, our organization indicates an intent to join the growing group of leading corporations that are setting emissions reduction targets in line with what climate science says is necessary. By doing so, we recognize the crucial role the business community can play in minimising the risk climate change poses to the future of our planet.

Thereby, I am pleased to confirm that [ ] is committing to:

☐ **Set near-term science-based emissions reduction targets** in line with the SBTi Criteria and Recommendations, and submit them to the SBTi for validations within a maximum of 24 months.

We acknowledge that our commitment will be recognized on the SBTi website as well as on our partner websites at We Mean Business. Companies who are participants of the UN Global Compact will also be recognized on the UNGC webpage.

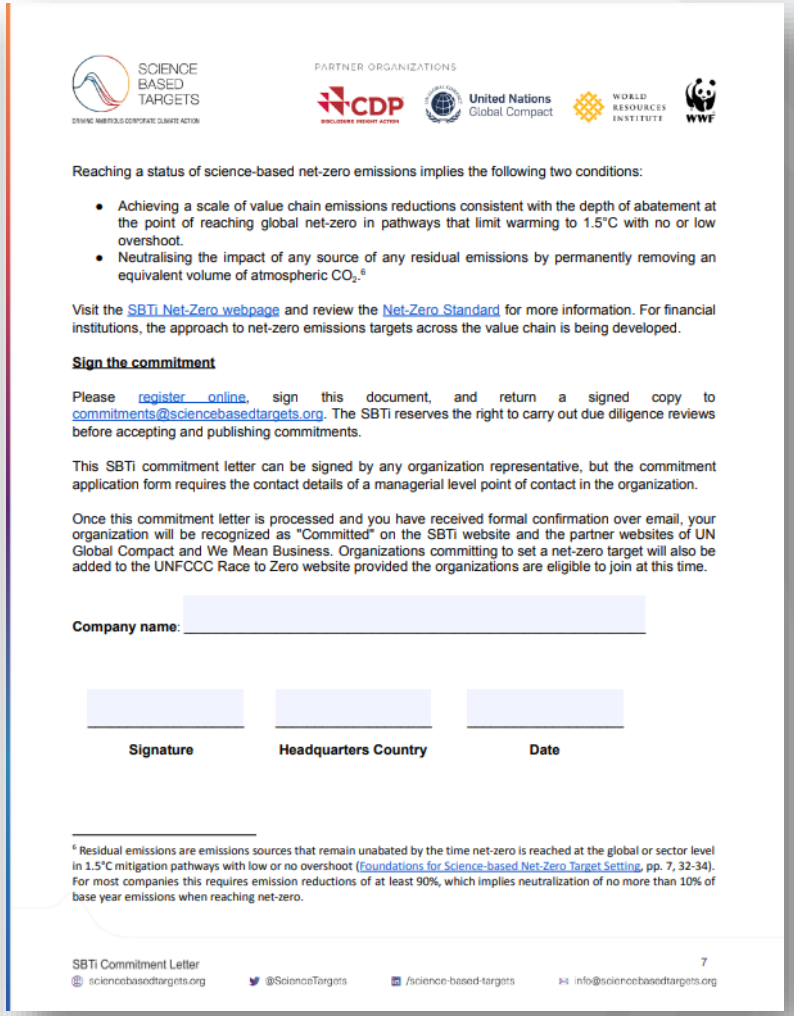
In addition, to align with the most ambitious aim of the Paris Agreement and to what science dictates is necessary to reduce the destructive impacts of climate change on human society and nature - to reach net-zero global emissions by 2050 at the latest in order to limit global warming to 1.5°C - my company is committing to:

☐ **Set net-zero targets, including a long-term science-based target:** My company commits to set long-term science-based targets to reach net-zero value chain GHG emissions by no later than 2050 in line with the SBTi Net-Zero Standard and submit it for SBTi validation within a maximum of 24 months. By committing to set a net-zero target, I also acknowledge that my company will be part of the Business Ambition for 1.5°C campaign. My company will also join the Race to Zero campaign.[3,4,5]

Near-term science-based targets are 5-10 year GHG mitigation targets in line with 1.5°C pathways.

Net-zero science-based targets are long-term targets that show companies how much they must reduce value chain emissions to align with reaching net-zero at the global or sector level in eligible 1.5°C pathways by 2050 or sooner. The SBTi defines the state of net-zero emissions for companies as reaching a state of no impact on the climate resulting from the organization's GHG emissions.

[3] All companies except oil and gas companies, airports and companies with >50% coal or at risk of non-parent approach will be able to join Race to Zero at this point in time. If companies have questions, please reach out to Race to Zero at racetozero@unfccc.int or refer to the Business Ambition for 1.5°C Guidance and FAQs document.
[4] Companies must have valid near-term science-based targets (SBTs) that meet the SBTi Criteria to be eligible for a net-zero target, unless the long-term SBT year is 10 years or fewer from the date of submission.
[5] Companies that are already part of the initiative can raise their ambition by also committing to set a net-zero target.



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Reaching a status of science-based net-zero emissions implies the following two conditions:

- Achieving a scale of value chain emissions reductions consistent with the depth of abatement at the point of reaching global net-zero in pathways that limit warming to 1.5°C with no or low overshoot.
- Neutralising the impact of any source of any residual emissions by permanently removing an equivalent volume of atmospheric CO_2.[6]

Visit the SBTi Net-Zero webpage and review the Net-Zero Standard for more information. For financial institutions, the approach to net-zero emissions targets across the value chain is being developed.

Sign the commitment

Please register online, sign this document, and return a signed copy to commitments@sciencebasedtargets.org. The SBTi reserves the right to carry out due diligence reviews before accepting and publishing commitments.

This SBTi commitment letter can be signed by any organization representative, but the commitment application form requires the contact details of a managerial level point of contact in the organization.

Once this commitment letter is processed and you have received formal confirmation over email, your organization will be recognized as "Committed" on the SBTi website and the partner websites of UN Global Compact and We Mean Business. Organizations committing to set a net-zero target will also be added to the UNFCCC Race to Zero website provided the organizations are eligible to join at this time.

Company name: _____

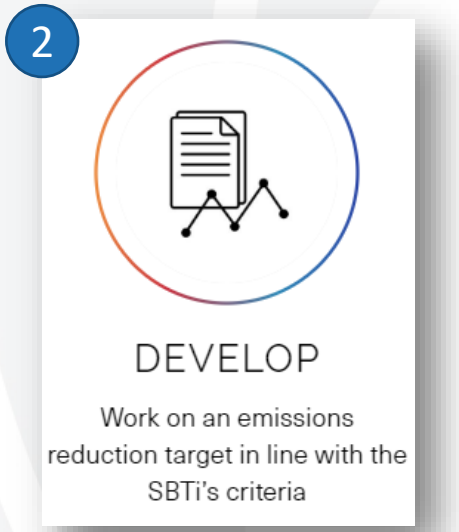
Signature	Headquarters Country	Date

[6] Residual emissions are emissions sources that remain unabated by the time net-zero is reached at the global or sector level in 1.5°C mitigation pathways with low or no overshoot (Foundations for Science-based Net-Zero Target Setting, pp. 7, 32-34). For most companies this requires emission reductions of at least 90%, which implies neutralization of no more than 10% of base year emissions when reaching net-zero.

Source: Science Based Targets initiative, Version 1.1 (Jan. 2023)

pinion

Setting a Science-Based Target - Develop



Requirements and resources for setting a target:

- SBTi Criteria
- SBTi Corporate Manual
- SBTi How-To Guide
- Target Validation Protocol

Target Development Process:

1. Review SBTi resources
2. Quantify your GHG inventory (if not already complete)
3. Model your target

Source: Science Based Targets initiative

pinion

Overview of SBTi Criteria

“Science-based” Criteria:

- The SBTi requires 1.5°C-aligned targets for scope 1 and 2 and targets aligned with well below 2°C or with 1.5°C for scope 3.

Timeframe:

- Once committed, the SBTi gives signees 24 months to create and set a target.
- Short-term targets are 5–10 years into the future (from date target is submitted to SBTi for official validation).
- Long-term targets are recommended (net-zero targets).

Reporting:

- Disclose GHG emissions inventory annually.

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Source: Science Based Targets initiative

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Scope and Emissions Coverage

- **Scope 1 and scope 2 target:**
  - Targets must cover company-wide scope 1 and 2 emissions.
- **Scope 3 target:**
  - If a company's relevant scope 3 emissions are **40% or more** of total scope 1, 2, and 3 emissions, a scope 3 target is required.
    - **NOTE:** Exemption for small- and medium-sized enterprises (SMEs).

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Source: Science Based Targets initiative

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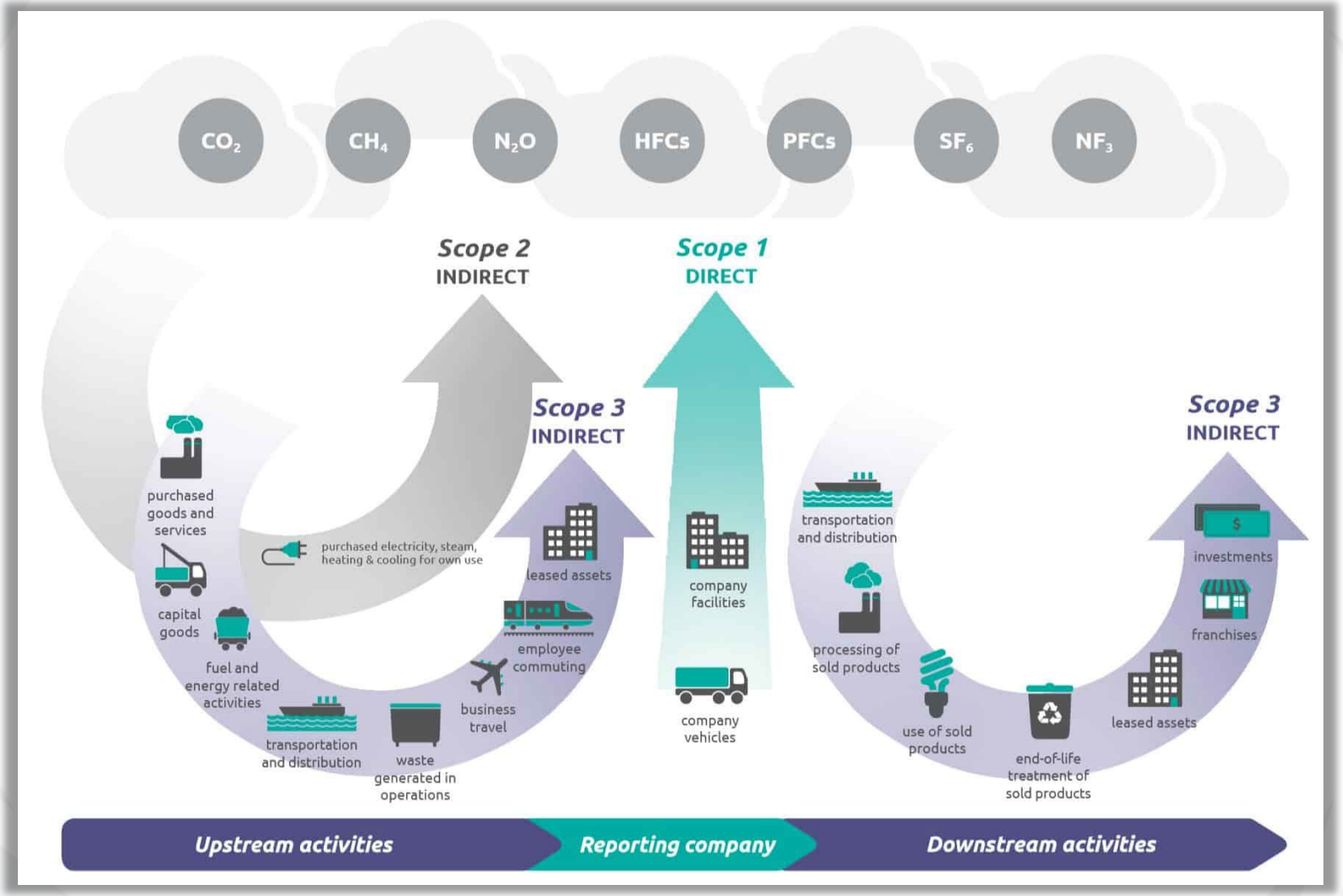
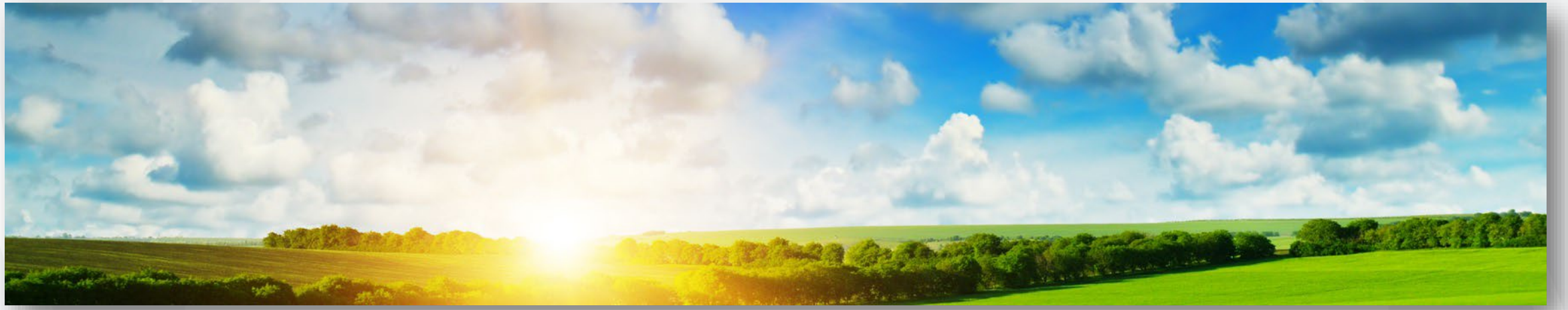
Scope 1, 2, and 3 Emissions



Source: GHG Protocol

pinion

Why are Supply Chain Emissions Important?



Measuring supply chain emissions is a key requirement for a science-based target.

- Of the top 50 food and beverage companies reporting scope 3 (supply chain) emissions, scope 3 emissions average 89% of total reported company emissions (scopes 1, 2, and 3).
- On average, scope 1 emissions account for only 6% of company emissions and scope 2 emissions accounted for only 5% of company emissions.

Source: Engage the Chain

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Modeling Your Target

SCIENCE BASED TARGETS

Science-based Target Setting Tool

Version: Version 2.1

Support: info@sciencebasedtargets.org

Section 1. Input data

Target setting method	Absolute Contraction Approach	*This approach is not applicable to power generation emissions*
SDA scenario		*Not applicable*
SDA sector		*Not applicable*
Base year	2022	*Select a base year*
Base year | Activity output		
Base year | Scope 1 emissions	700,000	*tCO2e*
Base year | Scope 2 emissions	100,000	*tCO2e*
Target year	2030	*Select a target year*
Target year | Type of activity projection		
Target year | Activity output		
Most recent year (MRY)	2022	*Select most recent year of available emissions&activity data*

Source: Science Based Targets initiative
Target Setting Tool v2.1

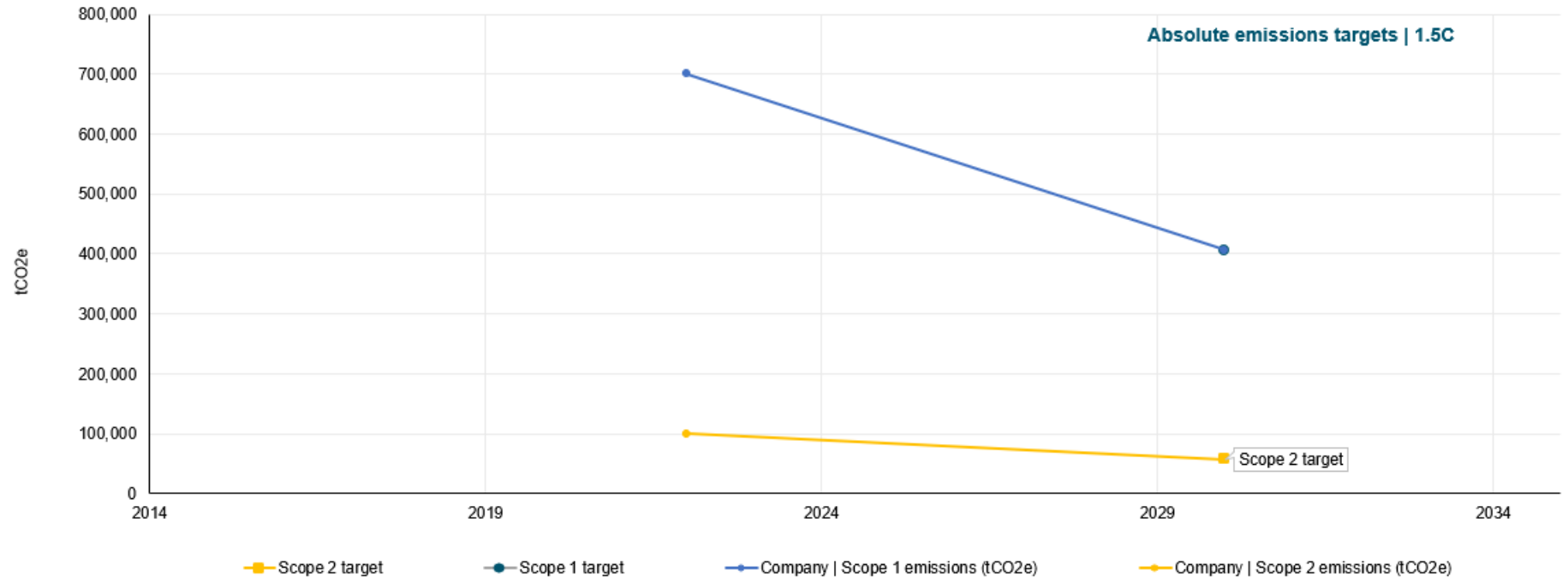
pinion

Modeling Your Target

1.5 degree scenario (1.5C)

Review all target modelling data

	Base year (2022)	Same as base year	Target year (2030)	% Reduction to date	% FLA Adjustment	% SBT reduction
Scope 1 emissions (tCO2e)	700,000	-----	406,000	-----	Not required	42.0%
Scope 2 emissions (tCO2e)	100,000	-----	58,000	-----	Not required	42.0%
Scope 1+2 emissions (tCO2e)	800,000	-----	464,000	-----	-----	42.0%



Source: Science Based Targets initiative Target Setting Tool v2.1

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Setting a Science-Based Target — Submit

3

SUBMIT

Present your target to the SBTi for official validation

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2 GHG Inventory

2.1. GHG inventory general questions

2.1 GHG INVENTORY GENERAL QUESTIONS		SUBMISSION FORM GUIDANCE
2.1.1. Does your inventory follow the GHG Protocol Corporate Standard? If not, list and explain any deviation from its requirements.	☐ Yes ☐ No If not, explain deviations: _____	*Indicate if your inventory is in accordance with the GHG Protocol Corporate Standard. Please indicate any deviation from the standard with reference to the chapter and page in question, as well as the justification for why the standard was not followed.*
2.1.2. State the consolidation approach used to calculate your GHG inventory and why it was chosen.	☐ Equity share ☐ Financial control ☐ Operational control Briefly explain why it was chosen: _____	*State whether you used the equity share or the control approach for your GHG inventory. If you used a control approach, state whether it was an operational or financial control approach. For more information on this please refer to Chapter 3 "Setting Organizational Boundaries" of the GHG Protocol Corporate Standard.*
2.1.3. Has your company experienced any recent significant change in your company structure e.g., following recent acquisitions, divestments and/or mergers?	☐ Yes ☐ No	*Significant change is defined as a cumulative change of five percent or larger in an organization's total base year emissions (CO2e).* *For detailed guidelines, please review Chapter 5 of the GHG Protocol Corporate Standard*

Source: Science Based Targets initiative Near-Term Target Submission Form (Mar. 2023)

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Setting a Science-Based Target — Submit

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Present your target to the SBTi for official validation

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2.2. Scope 1 and 2 questions

2.2 SCOPE 1 AND 2 QUESTIONS		SUBMISSION FORM GUIDANCE
2.2.1 Describe the primary operations and activities that account for emissions in scope 1 and 2.	Scope 1: Scope 2:	*For scope 1 and 2, please describe the primary activities of your company that are included in the inventory. If your company operates in different sectors, specify the activities for each. For more information on emissions scopes, refer to Chapter 4 "Setting Operational Boundaries" of the GHG Protocol Corporate Standard.*
2.2.2 Which method will the company use to track performance towards its scope 2 target?	Location-based ☐ Market-based ☐	*State whether you plan to use the location-based or the market-based method to calculate your scope 2 emissions in future inventories and track progress towards your scope 2 target(s). If you plan to set two scope 2 targets, one for the market-based approach and one for the location-based approach, please specify the method for each target using the Target ID. For more information on this please refer to Chapter 4 "Scope 2 Accounting Methods" of the GHG Protocol Scope 2 Guidance.*
2.2.3 If submitting a renewable electricity target, please specify the share of electricity consumption from renewable electricity procurement in	Base year: ____ Most recent year: ____ Target year (expected): ____ N/A ☐	*As indicated by the SBTi Criterion - Renewable Electricity, targets to source renewable electricity at a rate that is considered ambitious*

Source: Science Based Targets initiative Near-Term Target Submission Form (Mar. 2023)

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Setting a Science-Based Target — Submit

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Present your target to the SBTi for official validation

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		emissions and removals from bioenergy feedstocks."

2.7. GHG Inventory data

2.7.1. Table 1: GHG emissions inventory table for the base year and the most recent year			*For each of the scopes, fill out the table with information from your inventory for the base year in the white section and for the most recent year in the grey section.* *For targets submitted for validation in 2022, the most recent inventory data submitted must be for 2019 at the earliest. Historically, the SBTi has only allowed two years prior as valid most recent year inventories, however, due to the COVID-19 pandemic, the SBTi will accept 2019 inventories in 2022.*
Scope 1 and 2 emissions			
	Base year data	**Most recent year data**	
	Emissions (tCO2e)	**Emissions (tCO2e)**	
Scope 1	*Example input format: 1,300,526.50*	*Example input format: 1,300,526.50*	***Emissions (tCO2e)**: List the amount of emissions in metric tonnes of CO2e (tCO2e) for the relevant year.*

Source: Science Based Targets initiative Near-Term Target Submission Form (Mar. 2023)

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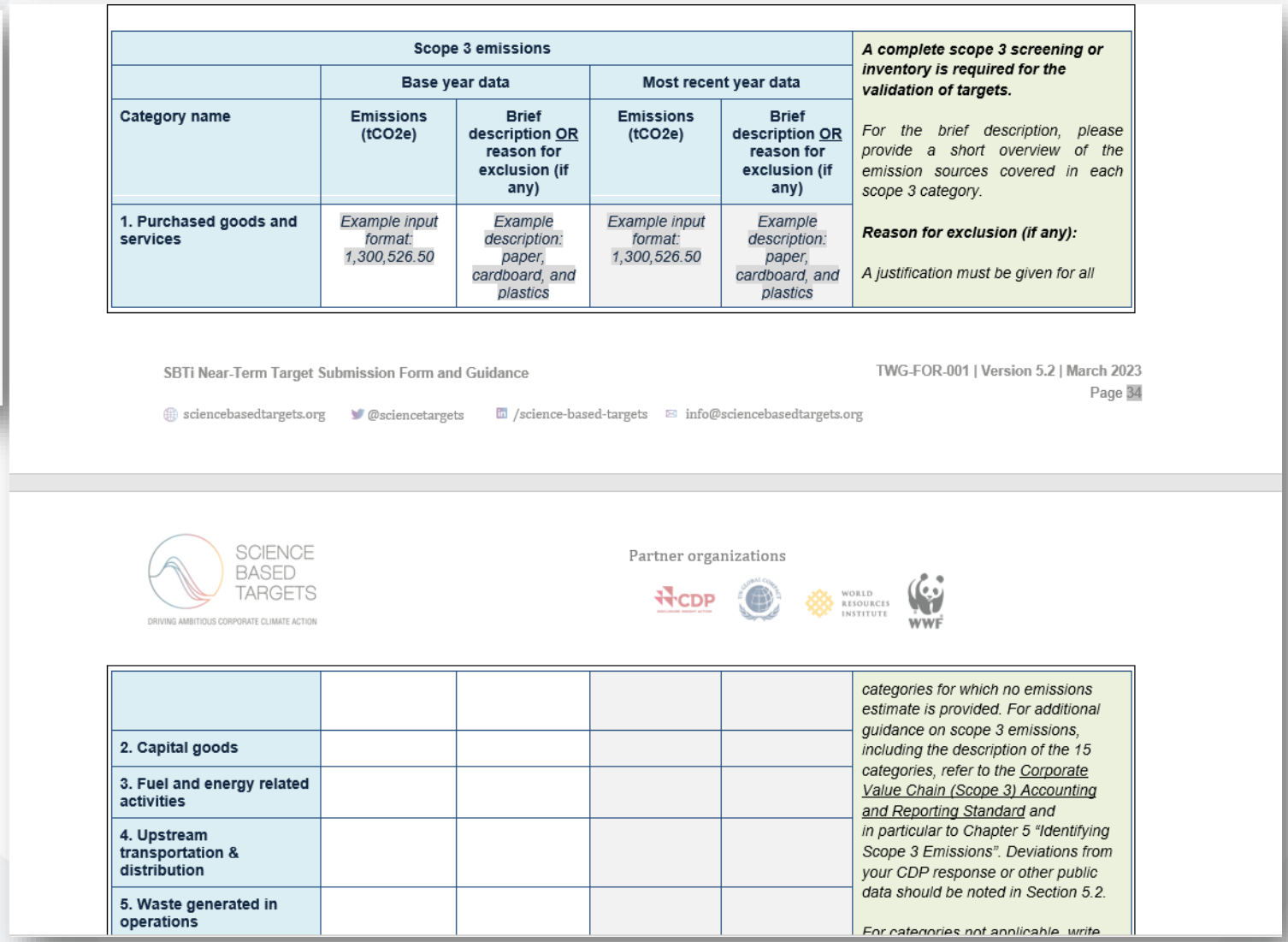
Setting a Science-Based Target — Submit

3

SUBMIT

Present your target to the SBTi for official validation



Scope 3 emissions					A complete scope 3 screening or inventory is required for the validation of targets.
	Base year data		Most recent year data		
Category name	Emissions (tCO2e)	Brief description OR reason for exclusion (if any)	Emissions (tCO2e)	Brief description OR reason for exclusion (if any)	For the brief description, please provide a short overview of the emission sources covered in each scope 3 category. Reason for exclusion (if any): A justification must be given for all
1. Purchased goods and services	Example input format: 1,300,526.50	Example description: paper, cardboard, and plastics	Example input format: 1,300,526.50	Example description: paper, cardboard, and plastics	

SBTi Near-Term Target Submission Form and Guidance TWG-FOR-001 | Version 5.2 | March 2023
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2. Capital goods					categories for which no emissions estimate is provided. For additional guidance on scope 3 emissions, including the description of the 15 categories, refer to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard and in particular to Chapter 5 "Identifying Scope 3 Emissions". Deviations from your CDP response or other public data should be noted in Section 5.2. For categories not applicable, write
3. Fuel and energy related activities					
4. Upstream transportation & distribution					
5. Waste generated in operations					

Source: Science Based Targets initiative Near-Term Target Submission Form (Mar. 2023)

pinion

Setting a Science-Based Target — Communicate

4

COMMUNICATE

Announce your target and inform your stakeholders

- Target is published on the SBTi's website
- SBTi provides communication guidance for announcing approved commitments

COMMUNICATIONS GUIDANCE FOR COMPANIES AND FINANCIAL INSTITUTIONS

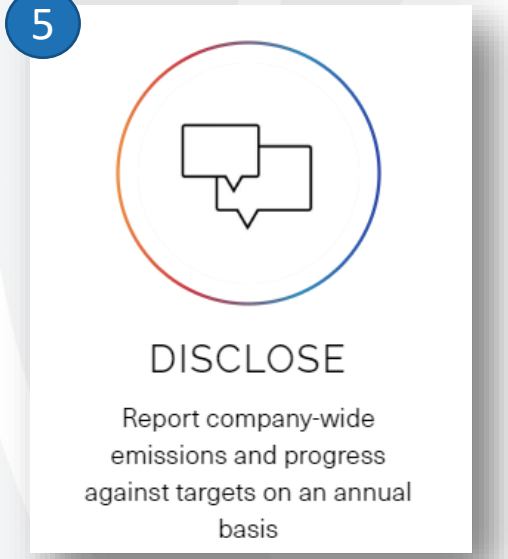
This guide supports companies and financial institutions at all stages of the SBTi journey to accurately and effectively communicate your involvement in the initiative.

Source: Science Based Targets initiative

pinion

Setting a Science-Based Target — Disclose

5



- Disclose emissions annually and monitor progress against your target in alignment with the SBTi Criteria.
- Emissions can be reported through
  - CDP
  - Annual reports
  - Sustainability reports
  - Your company's website

Source: Science Based Targets initiative

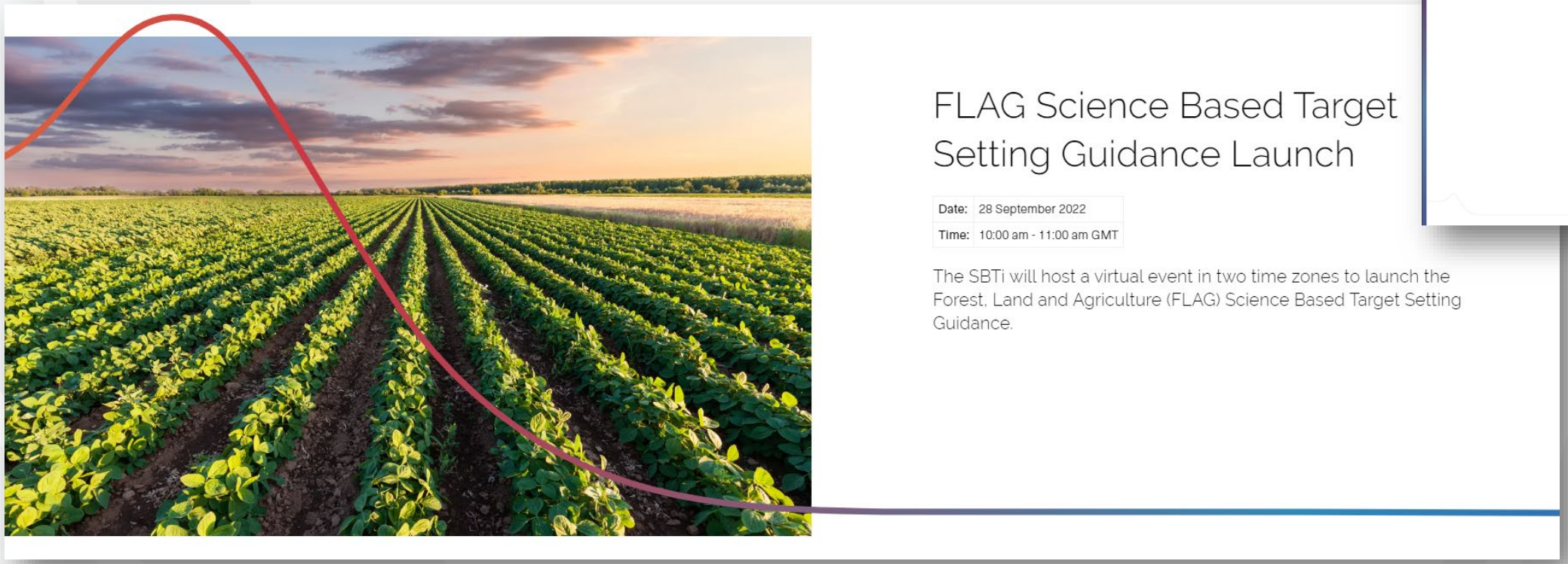
pinion

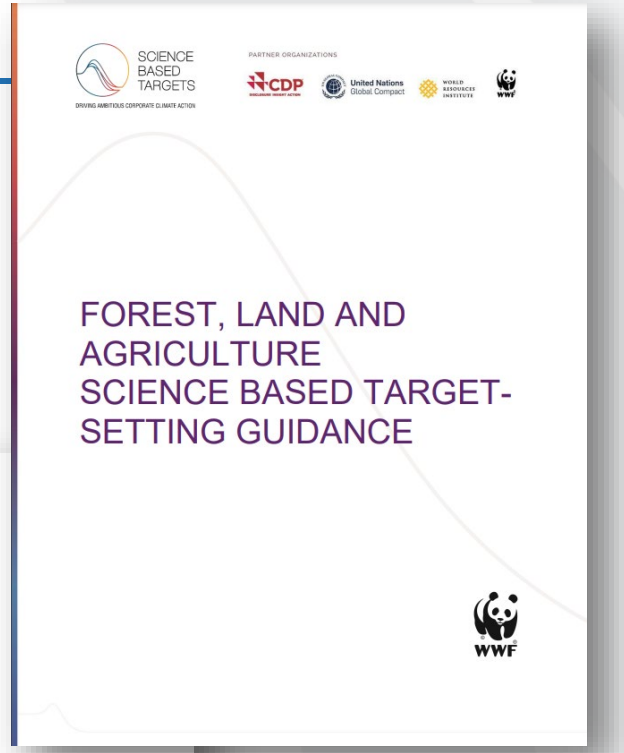
SBTi FLAG Guidance

pinion

What is the SBTi FLAG Guidance?

- Supports companies that are required to set science-based targets for Forest, Land, and Agriculture (FLAG) - related GHG emissions and removals.
- Applies specifically to **land-related emissions and removals** (under the GHG Protocol accounting guidance) in a company's direct emissions and supply chain.





Source: Science Based Targets initiative

pinion

Companies Required to Set FLAG Targets

- The SBTi requires companies that meet either of the following two criteria to set a FLAG target:

  1. Companies from the following sectors are required to set FLAG targets:
     - Forest and Paper Products
     - **Food Production**
       - Agricultural Production
       - **Animal Source**
     - **Food and Beverage Processing**
     - Food and Staples Retailing
     - Tobacco

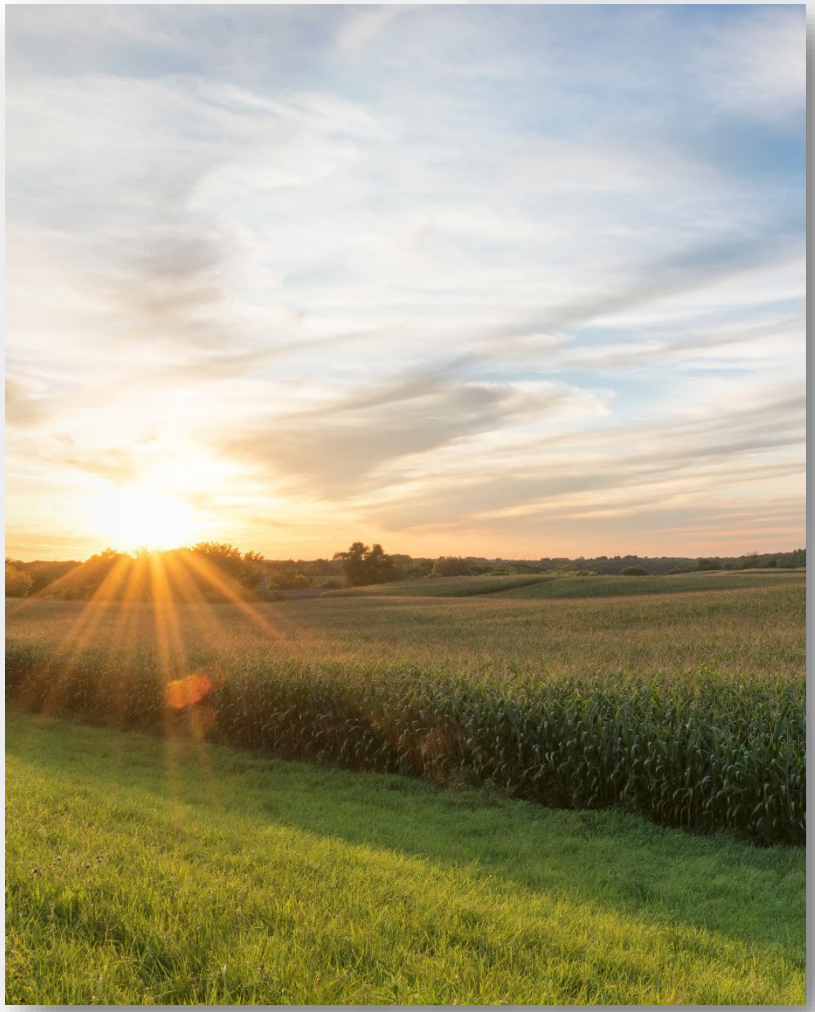
  2. Companies with FLAG-related emissions that **total 20% or more** of overall emissions across scopes.

Source: Science Based Targets initiative

pinion

What are the key requirements of the FLAG Guidance?

- **Set near-term FLAG science-based targets**
  - 5–10-year emission reduction targets in line with limiting warming to 1.5°C.
- **Account for removals in near-term FLAG science-based targets**
  - GHG removals: enhancing soil carbon sequestration on working lands, improving forest management practices, etc.
- **Zero deforestation targets must be set for no later than 2025**
  - Public commitment to no deforestation.
- **Set science-based targets for fossil emissions**
  - Set FLAG science-based targets AND science-based targets separately.
  - Land-based removals cannot be used to meet non-FLAG targets.



Source: Science Based Targets initiative

pinion

When are FLAG Targets Applicable?

- Companies that **do not have a validated SBT**:
  - Required to set FLAG targets **when submitting near-term targets**.
- Companies that **have SBTs validated prior to Jan. 1, 2020**:
  - Required to set FLAG targets by **end of 2023**.
- Companies that **have SBTs validated after Jan. 1, 2020**:
  - Required to set FLAG targets by **end of 2024**.
- Companies that **have validated SBTs and are submitting a net-zero target**:
  - Required to set FLAG targets **when submitting net-zero target**.

Source: Science Based Targets initiative

pinion

Near-Term FLAG Pathways

Near-Term target pathway name	Pathway type	Units	Absolute % reduction* (%/yr 2020-2030)
FLAG Sector Approach	Absolute	tCO_2e	3.03
FLAG Commodity–Beef	Intensity	tCO_2e/t fresh wt	2.40
FLAG Commodity–Chicken*	Intensity	tCO_2e/t fresh wt	3.90
FLAG Commodity–Dairy	Intensity	tCO_2e/t fresh wt FPCM	3.10
FLAG Commodity–Leather	Intensity	tCO_2e/t fresh wt	2.50
FLAG Commodity–Maize*	Intensity	tCO_2e/t fresh wt	3.50
FLAG Commodity–Palm Oil*	Intensity	tCO_2e/t fresh wt	3.10
FLAG Commodity–Pork*	Intensity	tCO_2e/t fresh wt	3.30
FLAG Commodity–Rice*	Intensity	tCO_2e/t fresh wt	2.90
FLAG Commodity–Soy*	Intensity	tCO_2e/t fresh wt	3.80
FLAG Commodity–Wheat*	Intensity	tCO_2e/t fresh wt	3.60
Mixed Sector Pathway (non-FLAG	Absolute	tCO_2e	4.20**

pinion

Why? A Customer's Perspective

pinion

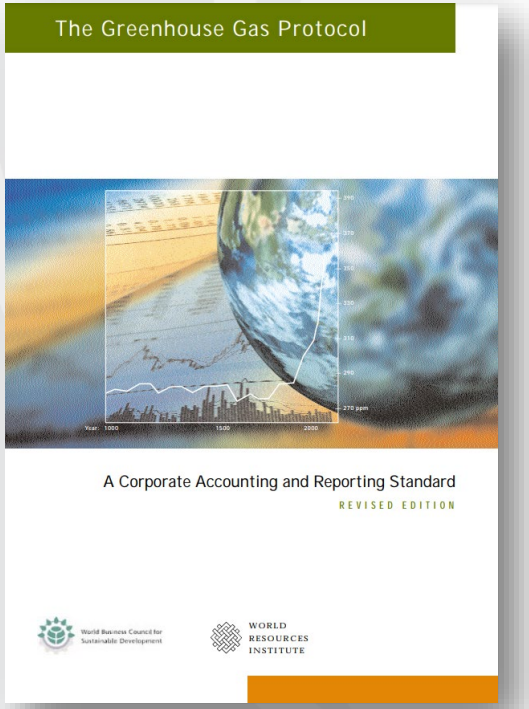
How to Quantify Scope 3 Emissions

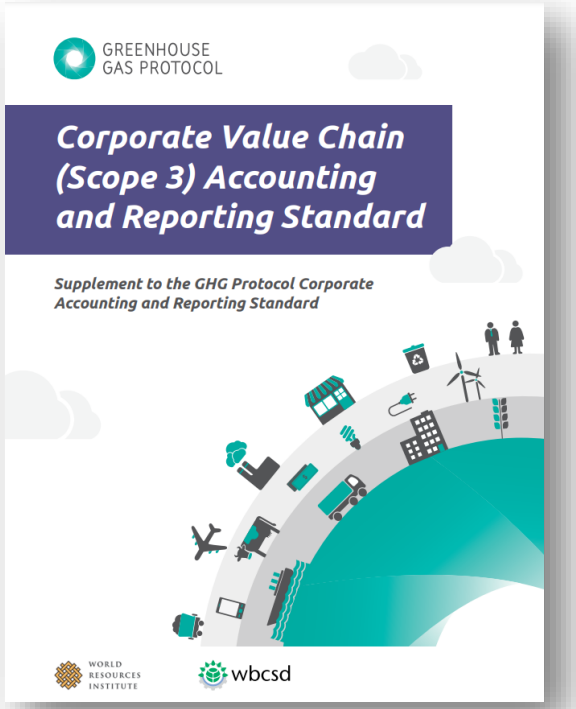
Requirements
Strategy
Resources

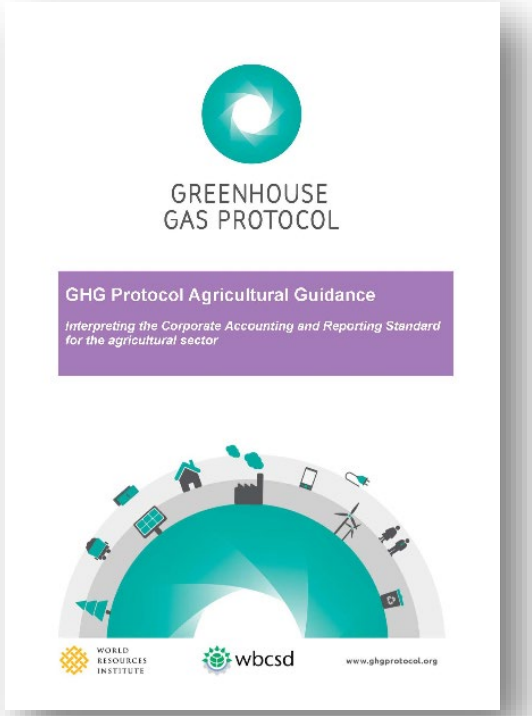
pinion

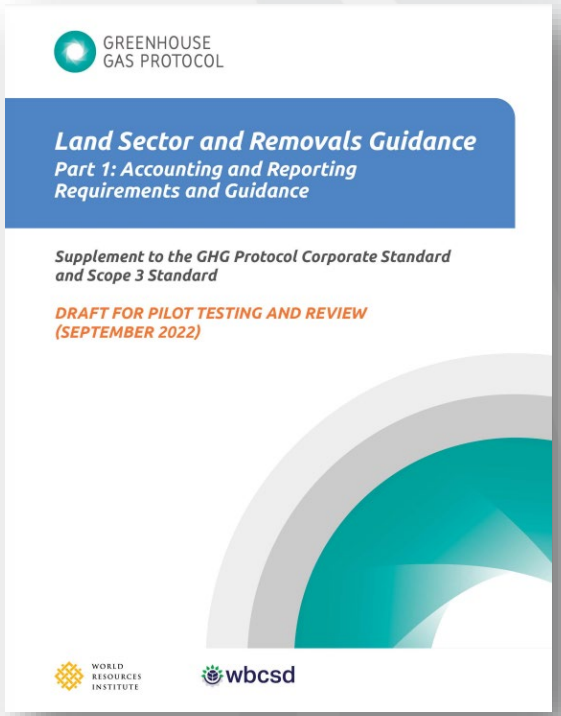
Accounting for Emissions — GHG Protocol

The GHG Protocol is the leading global for greenhouse gas accounting and reporting.









Source: GHG Protocol

pinion

How to Measure Your GHG Inventory

pinion

How to Measure – Determine Consolidation Approach

1. Determine consolidation approach

The GHG Protocol provides three consolidation approaches to select from when determining how to draw your GHG inventory boundary:

- **Operational Control**
  - Boundary drawn based on operations directly owned or operated by the company.
  - Operational control is often selected as the consolidated approach for most manufacturing companies (including meat processors).
- **Financial Control**
  - Boundary drawn according to what gets consolidated into its financial reporting (financial statements).
  - Often used by the investment industry.
- **Equity Share**
  - Accounting for emissions based on share of equity in a company.
  - Less commonly used.

pinion

How to Measure – Draw Inventory Boundary

2. Draw inventory boundary

- Determine which operations and activities are included within your boundary.
  - Depends on the consolidation approach you choose
- Draw boundaries around scope 1, 2, and 3 based on your selected consolidation approach.

"Operational Control" Example:

- Company Fleet – scope 1
- Third-party trucks – employee drivers – scope 1
- Third-party contracted transportation paid by the company – scope 3.4

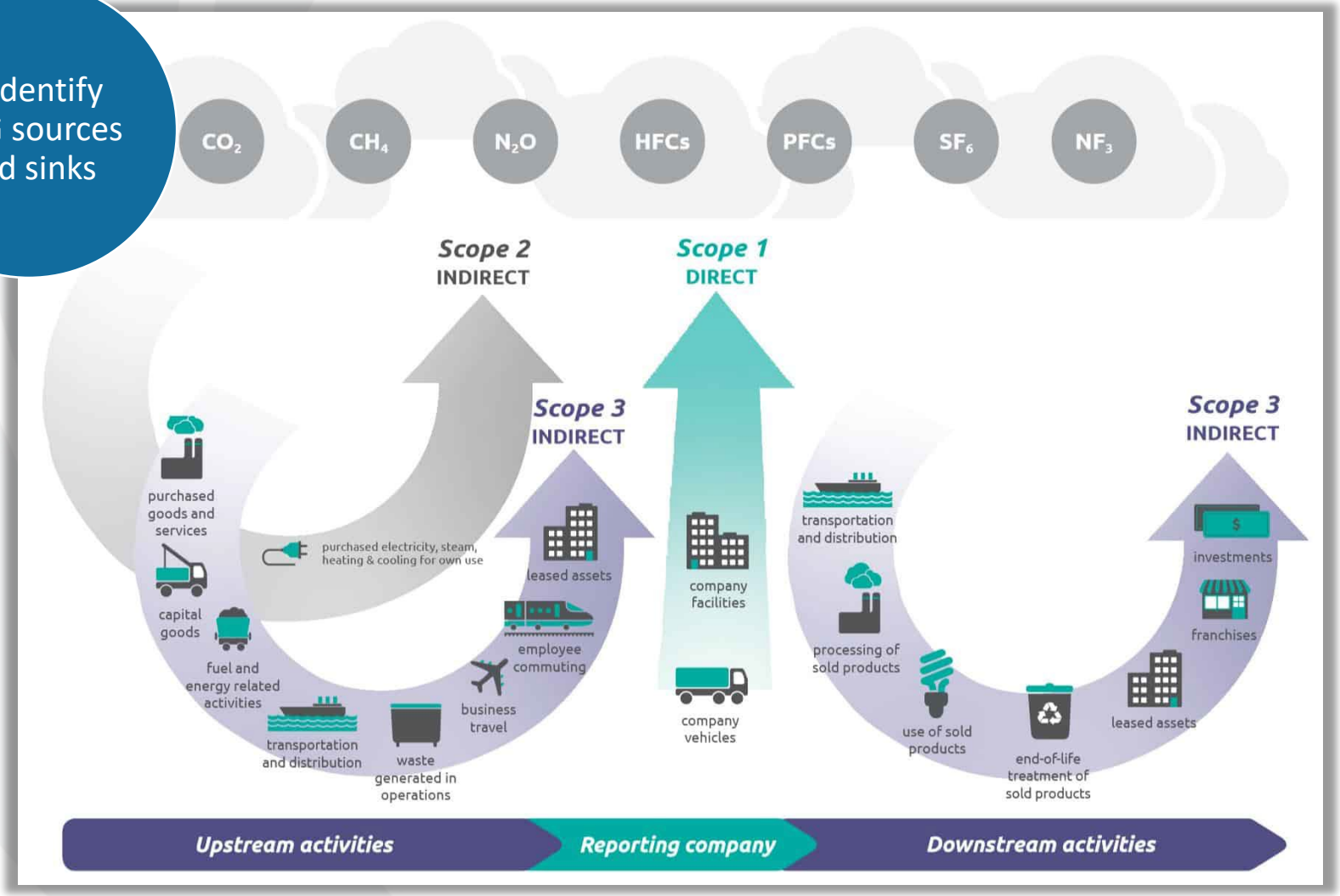
"Financial Control" Example:

- Company Fleet – scope 1
- Third-party trucks – employee drivers – scope 3.8
- Third-party contracted transportation paid by the company – scope 3.4

pinion

How to Measure — Identify GHG Sources and Sinks

3. Identify GHG sources and sinks



Source: GHG Protocol

Meat Processor Perspective

Scope 1 Emissions: Direct Usage

- Stationary combustion
- Mobile combustion — Transportation fuels (owned or operated transport)
- Fugitive emissions

Scope 2 Emissions: Indirect Usage

- Purchased electricity, heat, steam, or cooling

Scope 3 Emissions: Supply Chain

- 15 upstream and downstream categories
- Includes purchased goods and services from farm level

pinion

How to Measure – Perform GHG Screening

4. Perform GHG screening

- "Screen," or perform a high-level estimate of GHG emissions, to determine which emissions sources are most likely material.
  - Magnitude of expected emissions.

- Can be determined by reviewing industry LCAs.
  - *Example:* An estimated 85–87% of US beef supply chain emissions come from feed production, cow-calf operations, and feedlots.*
- Can be proxied by reviewing **spend** if other data is not available.

Goal: Provide direction for data gathering – where to spend more or less time.

Strategy

How does this change our GHG inventory approach?

- Supplier-specific or primary data should be targeted for material emissions sources if data is available.

**Source: Asem-Hiablie, S., Battagliese, T., Stackhouse-Lawson, K.R. et al. A life cycle assessment of the environmental impacts of a beef system in the USA (2019).*

pinion

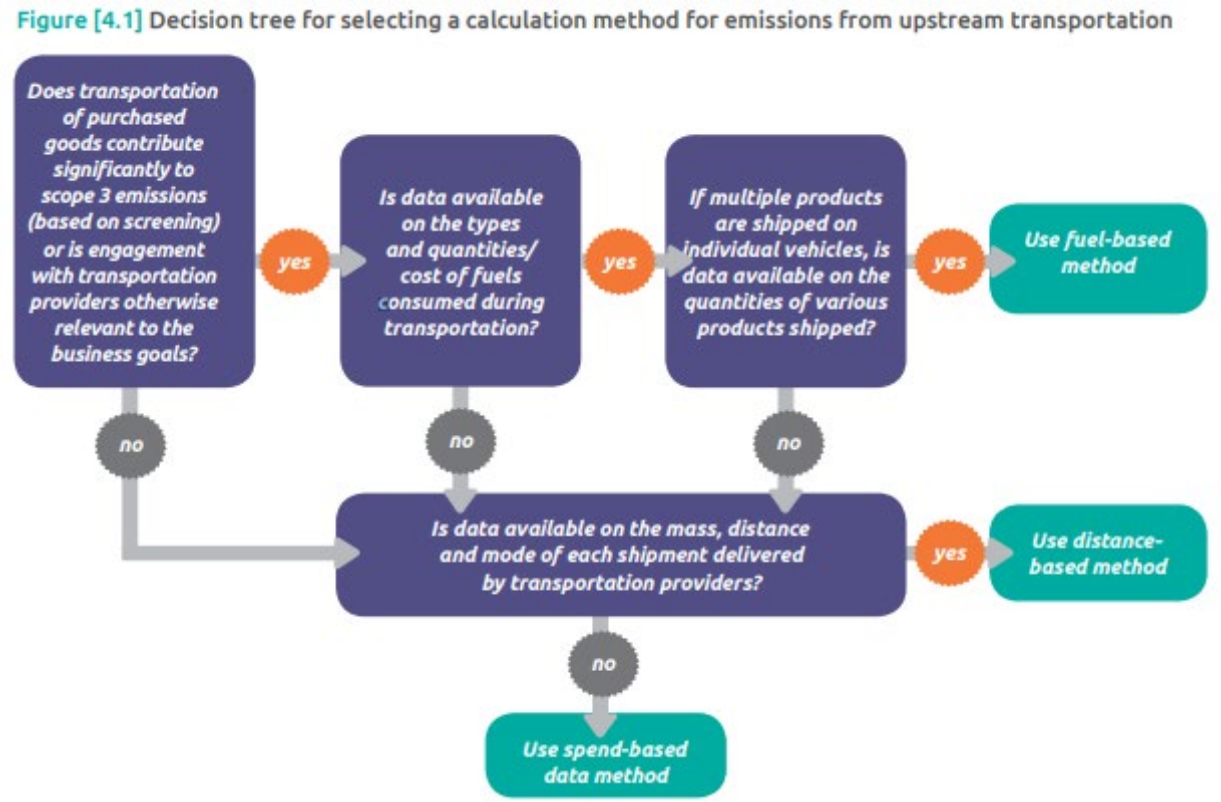
How to Measure – Choose Calculation Methods

5. Choose calculation methods

Choose Method

- Multiple methods to choose from for each type of emission (purchased goods and services, upstream transportation, etc.)
- Choose based on data availability and accuracy.

Figure [4.1] Decision tree for selecting a calculation method for emissions from upstream transportation



Strategy

- When weighing which method to use, consider whether you may directly try to reduce those emissions.
- If so, more accurate data is likely needed to compare the baseline to post-interventions.

pinion

How to Measure – Collect Data

6. Collect data

Within Your Company

Financial Data

- Fuel use and utility data (scope 1, 2, 3.3)
- Annual purchases / Expense data
  - Raw materials (scope 3.1)
  - Services (scope 3.1)
  - Transportation expense (scope 3.4)
  - Business travel (3.6)
  - Lease expenses (scope 3.8)
- Capital goods – Fixed asset reports (scope 3.2)

HR Data

- Employee commuting miles (scope 3.7)

Operations Data

- Waste diversion/disposal (scope 3.5)
- Transportation of product (scope 3.9)

Within Your Value Chain

Direct

- Sampling (scope 3.1)
- Surveys (scope 3.1)

Indirect

- Sustainability reports (scope 3.10)
- National averages (scope 3.11, 3.12)

Strategy

- Start with what is available.
- Increase primary data and data accuracy over time.

pinion

How to Measure

7. Quantify emissions

Apply Emissions Factors

- Emissions factors can be applied to activity data – fuel use, quantities purchased, amount spent, etc.
- Key sources of emissions factors:
  - EPA USEEIO – Emissions factors based on amount spent
  - EPA Emissions Factor Hub – Emissions factors by fuel, waste, electricity region (eGRID), etc.

Activity Data Diesel (gal)		Emissions Factor MT CH_4/gal		AR6 GWP-100 CO_2e/CH_4		MT CO_2e
100,000	×	0.00000041	×	29.8	=	1.2218

Apply GWPs

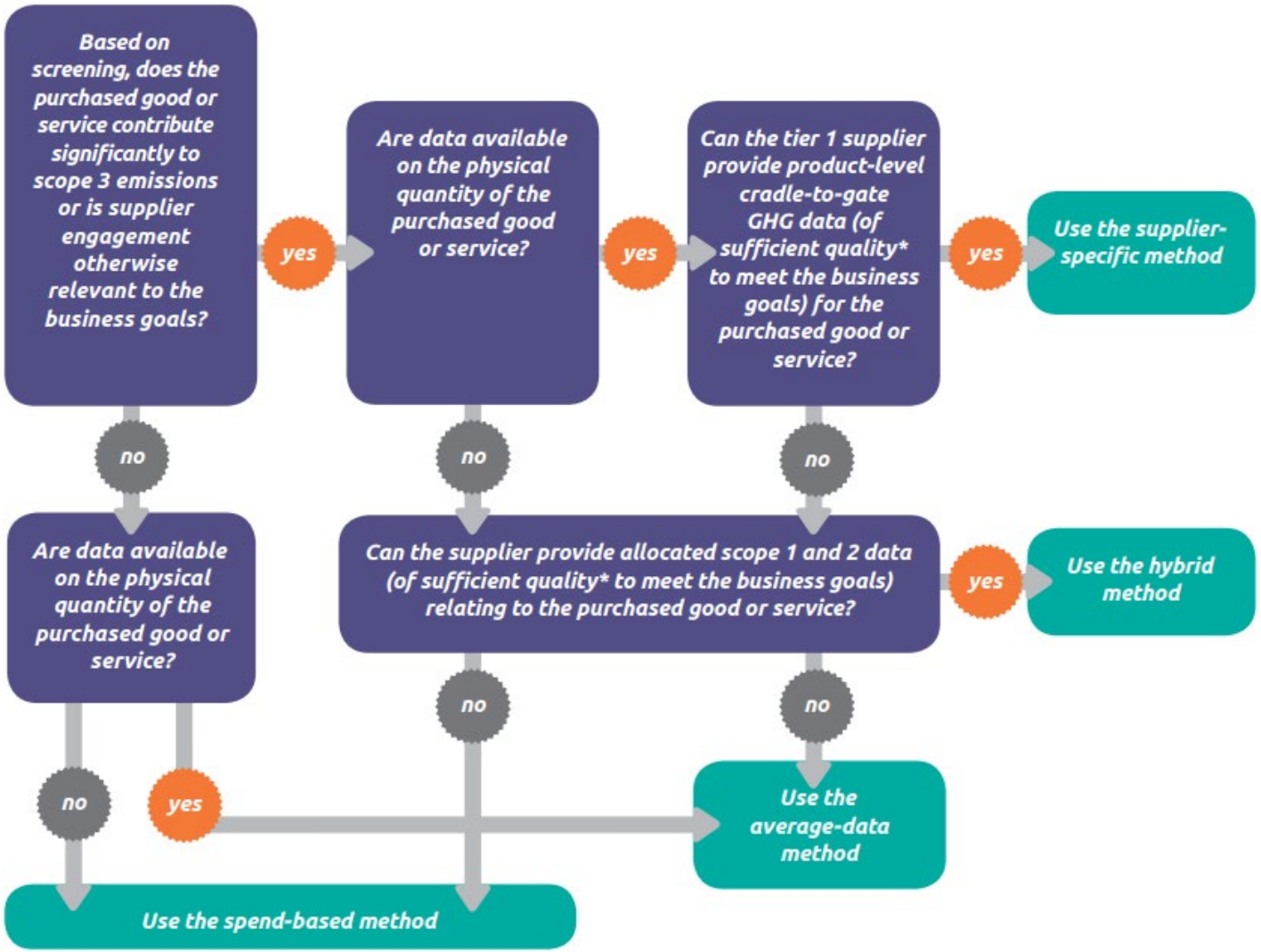
- Determine which IPCC Assessment Report (AR) to use for your 100-year global warming potentials (GWPs):
  - Typically most recent (AR6)
  - Can use the version approved for national inventories (AR4)
- Goal/Requirement: Consistency across your inventory
- More recent ARs will follow the most recent science.

GHG	AR4 GWP-100	AR6 GWP-100
CO_2	1	1
CH_4	25	27.9
N_2O	298	273

pinion

pinion

Scope 3 Category 2 Calculations (Capital Goods)



- In our example, we examine spend data from the reporting company for computer electronics purchased during the year.

Scope 3 Category 2 Calculations

Commodity Name	Substance	Unit	Emission Factors	GWP	kg CO_2e/ $	Sum Total kg CO_2e/ $
Computer and electronic products	Carbon dioxide	kg/$	0.085	1	0.085	0.100
Computer and electronic products	Methane	kg/$	0	29.8	0	
Computer and electronic products	Nitrous oxide	kg/$	0	273	0	
Computer and electronic products	other GHGs	kg CO_2e/$	0.015	1	0.015	

Purchase data	$	Sum Total kg CO_2e/ $	kg CO_2e
New office computer	$5,000	0.100	500

pinion

Break For Case Study Activity

pinion

Case Study Questions

1. Under the operational control consolidation approach, which facilities and operations are included in Happy Chicken's scope 1 and 2 inventory? Scope 3 inventory?
   a. Feed mill scope 1
   b. Hatchery scope 1
   c. Live transport scope 1
   d. Chicken processing scope 1
   e. Further processing scope 1
   f. Wastewater treatment scope 3
   g. Company-owned transport scope 1
   h. Transport to customers scope 3
   i. Ingredient Corp scope 3
   j. Cold and dry storage scope 3
2. What scope and category does Happy Chicken's wastewater fall under (for example, scope 3 category 2 - capital goods)? scope 3 category 5 - waste generated in operations

pinion

Case Study Questions

3. Please calculate Happy Chicken's scope 3 category 1 (purchased goods and services) emissions from the data provided in MT CO2e.

Tier 1 (Direct) Supplier Purchases		
	Quantity	Mass (lb)
Frying Oil	10	20
Eggs	10	5
Bread Crumb Mix	10	10
Sum	n/a	**35**

Ingredient Corp EF MT CO2e/lb
0.0001

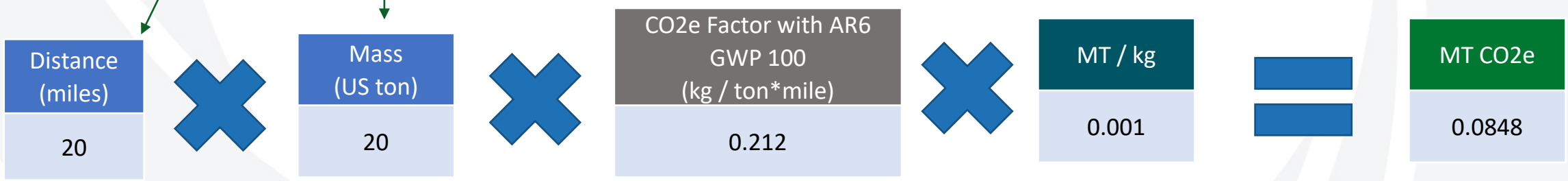
MT CO2e
0.0035

pinion

Case Study Questions

4. Please calculate Happy Chicken's scope 3 category 4 (upstream transportation and distribution) emissions from the data provided in MT CO2e.

Transportation of Goods			
Paid By	Cost ($)	Distance (miles)	Mass (US ton)
Happy Chicken	$100	**20**	**20**
Third Party	$200	10	30



pinion

Discussion Questions

1. How should Happy Chicken prioritize GHG data collection efforts?
    a. What sources of emissions should be prioritized?
    b. What strategy for prioritization could your company employ?
2. How might Happy Chicken collect data from contract growers?
3. If Happy Chicken switches from using directly operated transportation to outsourcing its live transportation, how will this affect the scope 1 and scope 3 GHG inventory?
    a. How will it affect the target if Happy Chicken sets a combined scope 1, 2, and 3 reduction target?
4. Which type of target would you recommend Happy Chicken set? Why?
    a. A single target for scope 1, 2, and 3 emissions
    b. A single target for scope 3
    c. Individual scope 3 category goals
5. Where can Happy Chicken look to make GHG reductions that may result in immediate cost savings?
6. How could Happy Chicken engage with its supply chain to reduce carbon emissions at the farm level?

pinion

SBT Panel Discussion

pinion

pinion

Potential Barriers to Setting Science-Based Targets

- Lack of Time / Complexity of Requirements / Lack of Technical Expertise
- Insufficient Data Available
- Little/No Perceived Value
- Fear that Voluntary Efforts Will Become Regulatory
- Cost

pinion

Approaching Potential Barriers

Lack of Time / Complexity of Requirements / Lack of Technical Expertise	• Resources are available to help streamline the process. • Reach out to your network (peers, consultants, etc.) for help.
Insufficient Data Available	• Use estimation initially and increase data accuracy over time. • Rely on financial data (spend) when other data is unavailable. • Document your assumptions / decisions made.
Little/No Perceived Value	• Setting a target and reducing emissions can lead to cost savings, increased innovation, stronger customer relationships, access to capital, risk mitigation, and increased resiliency.
Fear that Voluntary Efforts Will Become Regulatory	• A proactive approach is valuable – Knowledge is power. • Better to calculate your own emissions – Emissions calculated from primary data are often lower than national averages.
Cost	• Funding is available to implement projects. • Value chain collaboration is key.

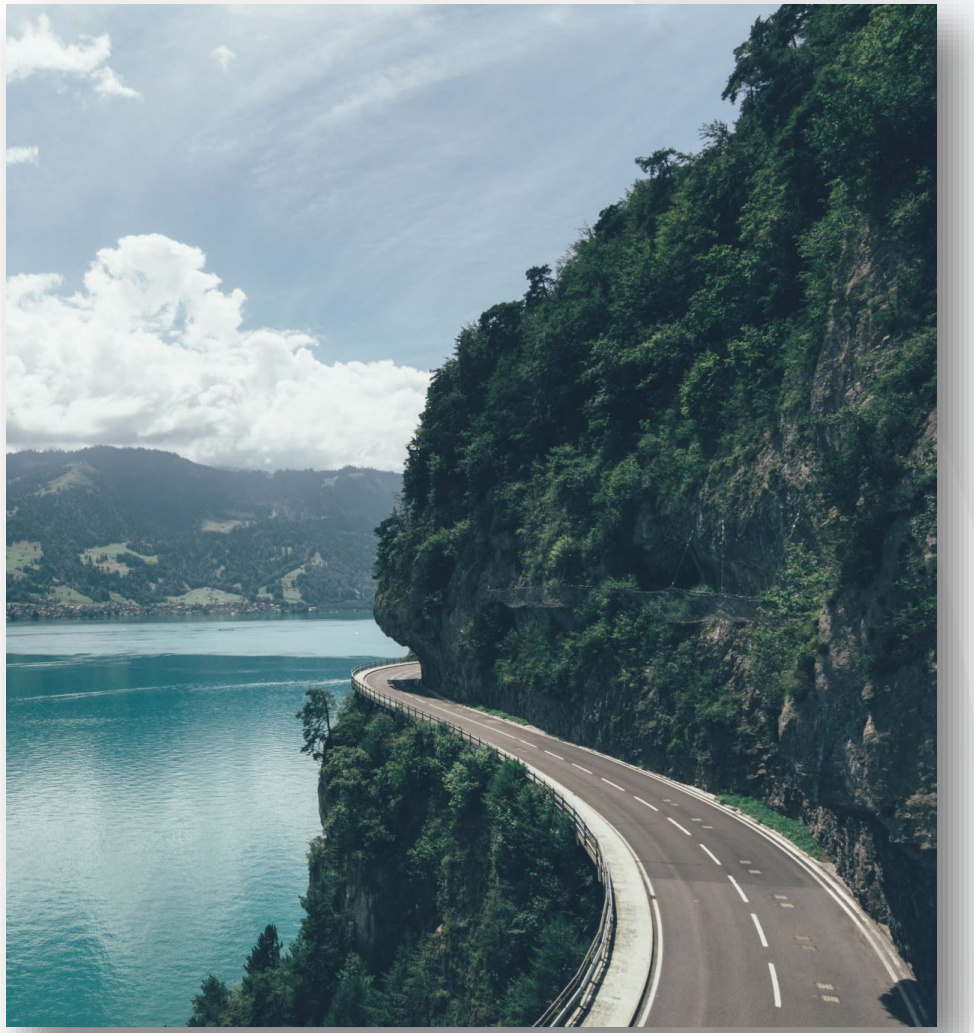
pinion

Strategies to Achieve SBTs

How to Achieve Science-Based Targets

Process to Determine How to Achieve Science-Based Targets

1. How do we **measure**?
    - Start simple and adjust over time.
2. What levers can we **influence**?
    1. Consider impact.
    2. Consider cost.
3. Where do we need to **collaborate**?
    - Emissions that are challenging to influence/reduce.
        - Value chain engagement.
    - Emissions that are expensive to influence/reduce.
        - Funding and cost share opportunities.



pinion

Determine Levers that Can be Influenced

Focus on what has a material impact.

Identify projects that pay you back (efficiency-based projects).

pinion

How to Achieve Science-Based Targets

Within Direct Operations (Packing/Processing)

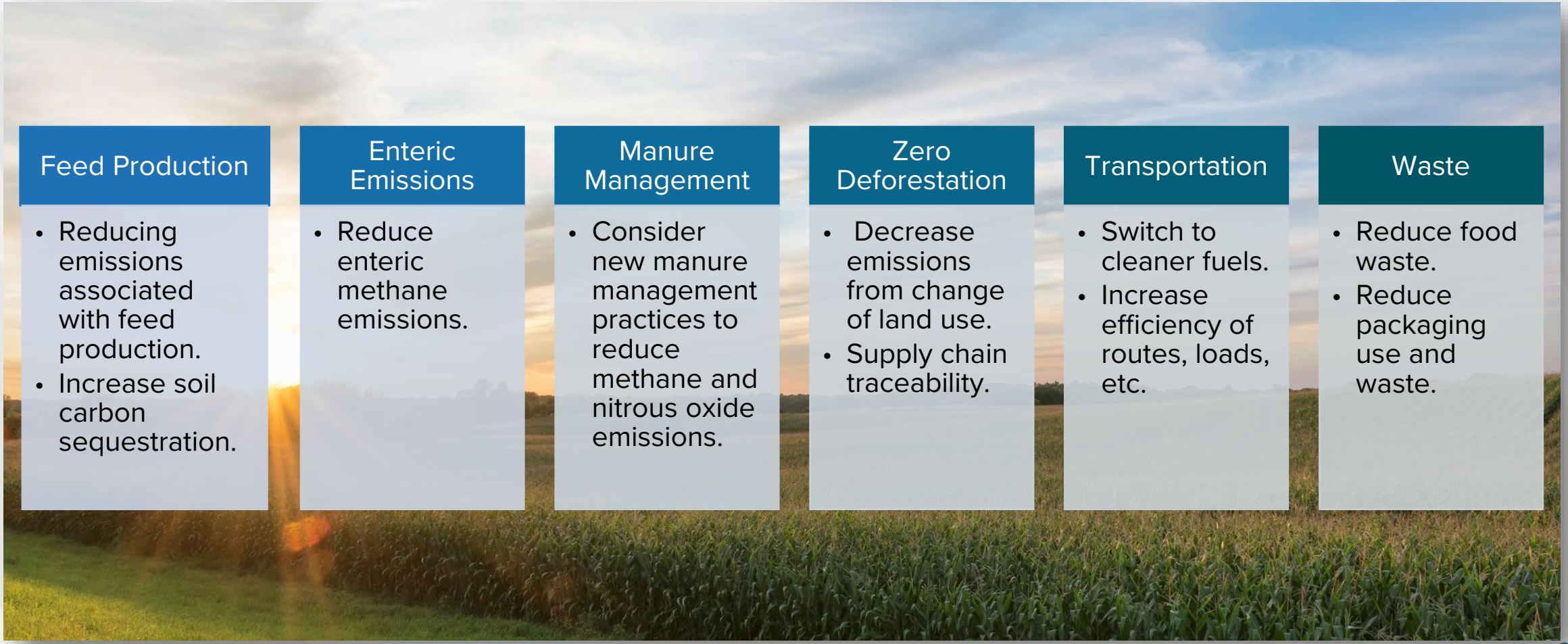
Reduce nonrenewable energy consumption

- Improve energy efficiency
- Increase renewable use
  - Direct use
  - Purchasing RECs, etc.

pinion

How to Achieve Science-Based Targets

Within Your Value Chain



Feed Production	Enteric Emissions	Manure Management	Zero Deforestation	Transportation	Waste
• Reducing emissions associated with feed production. • Increase soil carbon sequestration.	• Reduce enteric methane emissions.	• Consider new manure management practices to reduce methane and nitrous oxide emissions.	• Decrease emissions from change of land use. • Supply chain traceability.	• Switch to cleaner fuels. • Increase efficiency of routes, loads, etc.	• Reduce food waste. • Reduce packaging use and waste.

pinion

Where Do We Need to Collaborate?

Emissions that are challenging to influence/reduce – Value chain engagement.

- Examples (if not within your direct operations): Feed production, enteric emissions, and manure management.

Emissions that are expensive to influence/reduce – Funding and cost share opportunities.

Considerations:

- Look for value chain partners that would have shared benefits by implementing a project.
- Potential to layer with government funding.

Nestlé and Cargill team up with the National Fish and Wildlife Foundation to support sustainable grazing practices across 1.7 million acres in the U.S. over the next five years

Cargill

NEWS PROVIDED BY
Cargill, Inc. →
Mar 29, 2023, 07:00 ET

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As one of the largest private sector regenerative ranching initiatives in the U.S. to date, this partnership will support U.S. ranchers in adopting voluntary agricultural practices that help combat climate change

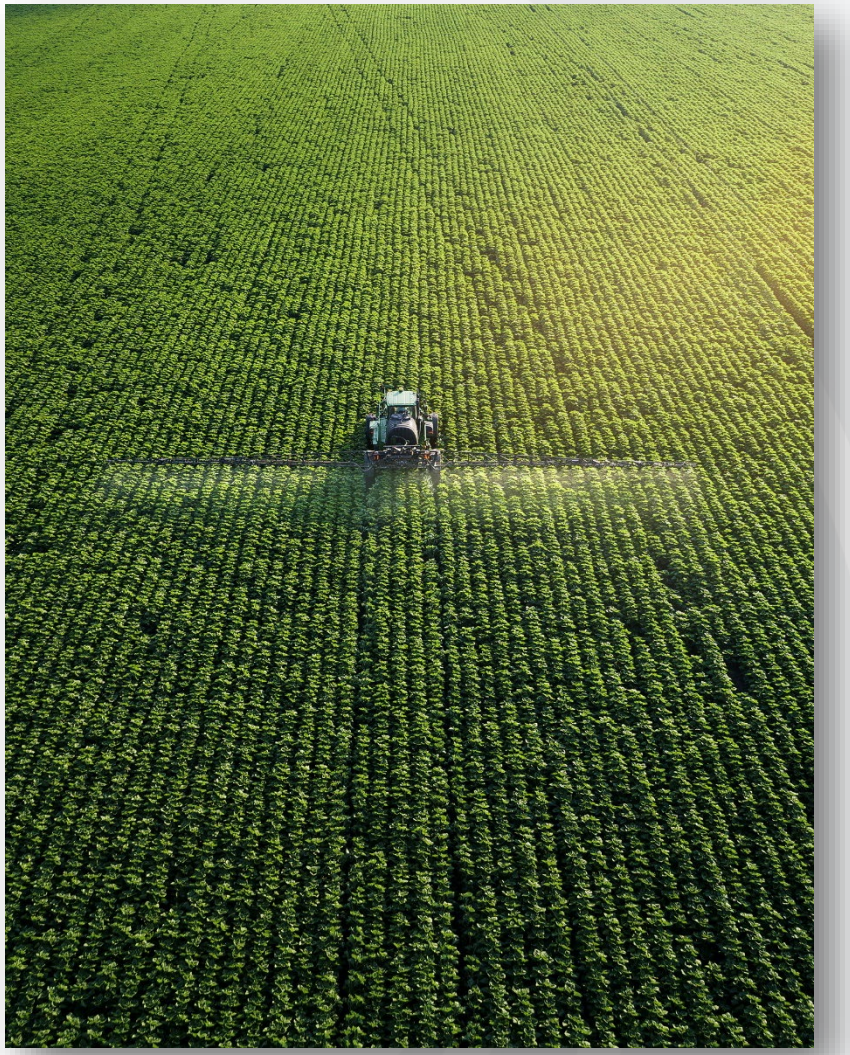
MINNEAPOLIS, March 29, 2023 /PRNewswire/ -- Nestlé, the National Fish and Wildlife Foundation (NFWF), and Cargill are coming together to help scale the adoption of voluntary conservation practices that help fight climate change. Through this work, the companies will support vital habitat for native wildlife, while also sustaining a robust beef supply chain. In one of the largest corporate commitments to regenerative ranching in the U.S. to date, two of the world's largest food companies will invest a combined $15 million. This commitment will leverage up to $15 million in federal funds, leading to the activation of up to $30 million in grant funding over the next five years.

pinion

pinion

Key Takeaways

- **Guidance is available** from the GHG Protocol, Science Based Targets initiative, and others to support industry members with measuring and reporting emissions.
- **Start with whatever data you have** – it is okay to begin with less specific data and later move to the more granular.
- Focus more on accurate data collection for emissions/removals sources that are **most material and most likely to be influenced by** your company (project implementation opportunities, etc.).
- **Collaboration** across the supply chain is key to success.



pinion

Debrief Questions

How interested are you in setting a SBT after this workshop?

- Want to set a target
- Not interested in setting a target
- Still unsure
- Already committed
- Already set

pinion

Debrief Questions

Do you feel you have a better understanding of what steps to take to set a target?

- Yes
- No

pinion

Debrief Questions

Do you feel you have a better understanding of the resources available to help you set a target?

- Yes
- No

Thank You

pinion

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